

PATENT CLAIMS

1. Arrangement for a vehicle in the form of a motorcycle with a support wheel system (8) located
5 between the front and rear wheels (3, 4) of the motorcycle, and where the front wheel is arranged in a wheel suspension (5), in or with which the front wheel can, depending on steering actions with steering means (handlebars, steering wheel, lever etc.) (7), be turned
10 into different desired turning steering positions, and also where, in the longitudinal section plane of the vehicle in the vertical direction, there is a projection (a) at the front wheel on account of the said suspension, characterized in that the support
15 wheel system is arranged to assign to the support wheels (10, 11) turning steering positions which depend on the turning steering positions of the front wheel and result in the vehicle, when performing turning steering in primarily the lower speed range of the
20 vehicle, taking up with its said longitudinal section plane a vertical position or a position in relation to the said vertical position which is inclined slightly in the same direction (R) as the assigned turning steering direction of the front wheel, in that an
25 imaginary axis or imaginary axes extending through the centres of the support wheels, here called cross axis (28) or cross axes (24, 25), extend essentially through the centre of turning (26, 26') of the vehicle when turning of the vehicle takes place, and in that
30 compensation for the lateral movements and the steering angle deflections of the support wheels at the turning steering movements of the vehicle are effected in accordance with one of the following options;
a) in that the unit bearing the support wheels is
35 mounted on the chassis via a ball-and-socket joint (12') arranged to effect the compensation;
b) in that the steering joints (16, 17) for the support wheels are arranged to effect the compensation by means of an active or passive arrangement, or

c) in that, by means of its mounting with or around the vertical axis, a unit (9'') bearing of the support wheels (10'', 11'') effects the compensation either actively or passively by possible locking at higher
5 speeds.

2. Arrangement according to Patent Claim 1, characterized in that it comprises a unit (9) which bears the support wheels and is mounted on the chassis
10 (2) of the vehicle.

3. Arrangement according to Patent Claim 1a, characterized in that the ball-and-socket joint (12) is arranged to allow movements of the unit around an
15 imaginary axis extending in the longitudinal section plane and movements around another two imaginary axes which extend at 90° in relation to the imaginary axis extending in the longitudinal section plane.

20 4. Arrangement according to Patent Claim 1b, characterized in that the unit bearing the support wheels is arranged rotatably around or with an axis extending essentially horizontally in the longitudinal section plane and bears steering joints for the support
25 wheels, around or with which steering joints (16, 17) the support wheels (10', 11') are arranged rotatably relative to the unit (9') bearing the support wheels in order to adjust themselves in their turning directions when turning of the vehicle takes place.

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5. Arrangement according to Patent Claim 1b, characterized in that the passive system includes or utilizes a locking function arranged so as to be activatable at higher speeds.

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6. Arrangement according to Patent Claim 1b, characterized in that the active system includes a steering function with a hydraulic cylinder (20) for one support wheel (10') and a steering function by

means of a track rod (21) from the said support wheel (10') to the other support wheel (11').

7. Arrangement according to Patent Claim 1c, characterized in that the unit bearing the support wheels is arranged rotatably around or with an axis extending essentially vertically in the longitudinal section plane.

10 8. Arrangement according to Patent Claim 1c or 7, characterized in that the support wheels (10'', 11'') are mounted on the unit (9'') bearing the support wheels with or on bearing axles coinciding with a common cross axis (28) of the support wheels.

15 9. Arrangement according to Patent Claim 1 or 2, characterized in that the support wheel system comprises a unit which bears the support wheels and is arranged rotatably in relation to the chassis of the vehicle in or around three main directions (18', 27', 30'), a first direction extending in the horizontal direction or in a slightly inclined manner in relation to the horizontal direction in the said longitudinal direction plane of the vehicle, a second direction
20 extending in the vertical direction in the said longitudinal direction plane, and a third direction
25 extending at right angles to the said longitudinal direction plane.

30 10. Arrangement according to Patent Claim 9, characterized in that a first axis (30'), here designated an inclination axis, around or with which the unit is rotatable in a first direction of rotation, extends in the first direction, in that a second axis
35 (27'), here designated a steering axis, around or with which the unit is rotatable in a second direction of rotation, extends in the second direction, and in that a third axis (18'), here designated a spring-action axis, around or with which the unit is rotatable in a

third direction of rotation, extends in the third direction.

11. Arrangement according to any one of Patent Claims 1-10, characterized in that one or more steering damper(s) (12, 13) damping the deflection movement(s) is or are arranged between the chassis and the unit bearing the support wheels or assigned to elements associated with the support wheels, for example the bearing axles of the support wheels.

12. Arrangement according to any one of Patent Claims 1-11, characterized in that the vehicle comprises inclination and shock dampers (14, 15) arranged between the chassis (2) and the unit bearing the support wheels.

13. Arrangement according to Patent Claim 12, characterized in that an automatic balancing system or manually operable, for example via a foot pedal, hydraulic cylinders is or are arranged to regulate the inclination and shock dampers.

14. Arrangement according to any one of Patent Claims 1-13, characterized in that the steering dampers (12, 13) are arranged with an end stop function, in which the steering damping function changes into a stop function for the turning movements of the support wheels.